REMARKS

Claims 1-62 are currently pending. Various claims have been amended for readability and for the reasons explained below. Reconsideration of the present application is respectfully requested.

Information Disclosure Statements

It is noted that the Examiner has drawn lines through the listing of two Korean documents in the Second Information Disclosure Statement on the accompanying form PTO-1449 and three Japanese documents along with the listing of a Japanese Office Action on the PTO-1449 accompanying the Third Information Disclosure Statement. Such markings generally indicate the Examiner declined to consider the reference, but no particular reason for this indication has been provided in the Office Action.

With respect to the Second Information Disclosure Statement, it is noted that English language abstracts and an English translation of the Korean Patent Office Action in which these documents were cited have been supplied. Both the abstract and the English translation of the Korean Office Action act as the English statement of relevance required by 37 C.F.R. §1.98. Hence, upon review, it is not apparent to the undersigned why these documents were not officially considered by the Examiner. Further, it is apparent from the image file history that these documents were received.

The same is true of the Third Information Disclosure Statement, i.e., the documents seemed to have been received and the English translation of the Japanese Office Action seems to have been received.

Applicants respectfully request that these documents be officially considered by the Examiner or an explanation supplied as to why they have not been.

Acknowledgement of Priority

The Office Action Summary includes both an indication of an acknowledgment made for the claim for foreign priority and that certified copies of the priority document were received, with a check box (12a) was not checked. While the record is likely sufficiently clear, Applicants respectfully request that all three boxes (12, 12a and 12a1) be checked in the next Office Action so that the record does not have any possible ambiguity.

Claim rejection - 35 U.S.C. §101

The Office Action includes a rejection of claims 60-62 under 35 U.S.C. §101 as allegedly being non-statutory. The Office identified that in the specification the computer readable recording medium was defined to include carrier waves. It is the undersigned's understanding the Office is of the position that the computer readable recording medium must be tangible and not include carrier waves. This is in accordance with In re Petrus Nuijten, (CAFC 2006-1371). Accordingly, claims 60-62 have been amended to recite a tangible computer readable medium in light of this recent case law and the Office's current position. Therefore, it is respectfully submitted that claims 60-62 pass muster under 35 U.S.C. §101.

Claim rejection-35 U.S.C. §102

Claims 1-6, 19-23, 42-45, 59 and 62 were rejected in the Office Action under 35 U.S.C. §102(e) as allegedly being anticipated by *Zhang et al.* (2002/0010938) (hereinafter "*Zhang*"). This rejection is respectfully traversed.

Zhang

Zhang discloses a resource allocation mechanism in a multi-stream IP network. It includes three basic components. The server 210, the internet 220 and the client 230. According to paragraph [0024], *Zang* appears to be directed to provide a multi-media streaming TCP-friendly transport protocol that can adaptively estimate the network bandwidth and smooth the sending rate. Accordingly to paragraph [0025], this is done through a resource allocation architecture that allocates resources among multiple media streams over a network. In paragraph [0026], the available bandwidth is said to be estimated at a sender based upon the transmission characteristics of the connection monitored at the receiver side. A global buffer is allocated for the mixed media data stream to be transmitted from the sender to the receiver as a function of the estimated available bandwidth at the sender. However, a portion of each video object plane (VOP) in the global buffer is pre-encoded with respect to a quantization parameter (QP) of the VOP. The VOP in the global buffer is then encoded based on the QP. An update is performed. This is distinct from the presently claimed invention. Further, the sender transmits the encoded VOP in the movable buffer at a regulated sender transmission rate from the sender as a function of the estimated available bandwidth of the sender.

As articulated in *Zhang's* paragraph [0028], the TCP-friendly protocol is said to be used to obtain network characteristics included in the packet-loss rate, delay and jitter. Network characteristics are used to estimate the available network

bandwidth and to make adjustments in the sending rate. As identified in paragraph [0043] of *Zhang*, the multimedia streaming TCP-friendly transport protocol (MSFTP) is said to be a rate-based TCP-friendly protocol that continuously monitors a connection between the sender and the receiver, which are then used to regulate the bit transmission rate of the server 210.

While it appears that the Office is relying upon the second implementation as illustrated in Figure 9 showing a network adaptive sending rate control scheme, it is noted that in paragraph [0049] with respect to the first implementation, the header of the sender-side packet includes the packet sequence number, a time stamp indicating the time when the packet was sent (ST1) and the size of the sending packet the receiver is said to feed back to the sender such information a the rate at which the data is received and based on the receivers feedback, the sender uses the TCP model to adjust the sending rate in the TCP-friendly manner.

However, with respect to the embodiment relied upon in the Office Action, the MSTFP includes a calculation of the available bandwidth that is said to be dynamic. It includes five stages, as articulated in paragraphs [0106] - [0126] and an examination of this portion of the *Zhang* disclosure, and in particular a review of the equations used in these paragraphs, illustrates that the present invention is not disclosed therein. The explanation as to why *Zhang* does not anticipate the claims will be done with respect to the rejected independent claims, as identified below.

Independent Claim 1

Claim 1 recites *inter alia* a multimedia streaming server which streams multimedia *corresponding to a predetermined quality of service (QoS) level in response to a partial result of a metadata correspondence to the multimedia data*

intended to be provided for the service. This is described at various points in the present application, particularly at paragraph [0038] and with particular reference to Figure 10 starting at paragraph [0073] - [0076].[1] For instance, the number of the quality of service levels is determined when the metadata defined and the target bit rate of each level is determined based on the average bit rate of the multimedia data this can be done on a frame by frame basis, that is, the video stream might have three different levels and as the network bandwidth changes dynamically, frames in sequence can be chosen from each of the levels in accordance with a particular bandwidth at that time. See paragraph [0072] as well as the description of Figure 11 starting at paragraph [0076].

As articulated in claim 1, the streamed multimedia data is dependent upon both the quality of service identified in the metadata corresponding to the multimedia data intended to be provided for service, as well as the network bandwidth information which is input from a client.

As further articulated in claim 1, the multimedia streaming client measures the bandwidth of the network to which the server is connected by using a time interval when the multimedia data is received and the information on the size of the multimedia data, and then transmits the measured bandwidth information to the server. This is explained, for instance, in paragraphs [0017], [0059] and [0060], for instance. By this mechanism, only the metadata need be specified from multimedia data, and the apparatus and method of the present invention can be applied regardless of the format of contents to be delivered without serious burden on the server, as identified in paragraph [0091] of the present application.

---

[1] The published version of the present application (U.S. 2005/0076136) will be used for ease of consideration of the citations mentioned above.

Not only is this far simpler, it is far different than the network adaptive rate control scheme articulated in *Zhang* which is dependent on a number of factors and has five stages to it. So far as the undersigned can tell *Zang* does not include a multimedia streaming server which streams multimedia data corresponding to a predetermined quality of service level in response to a parsing request of metadata corresponding to the multimedia data intended to be provided for service and network bandwidth information which is input from a client, particularly where the multimedia streaming client measures the bandwidth of the network to which the server is connected by using a time interval when the multimedia data is received and information on the size of the multimedia data, and transmits a measured bandwidth information to the server.

Claims dependent from claim 1

The Office asserts dependent claims 2-6, 19-23 are all anticipated by *Zhang*. Applicants respectfully disagree. Building upon the explanation given above with respect to claim 1, it is noted that the fourth recitation of claim 2 does not seem to be present in any form in *Zhang*. Claim 2 recites *inter alia* that the quality of service processing units selects a quality of service available for service in response to the descriptor information and network band information and extracts multimedia data corresponding to a selected quality of service level from the data storage unit. As mentioned above, this can be done on a frame-by-frame basis. The undersigned could not identify corresponding structure in the network adapter rate control scheme of *Zhang*.

This is particularly apparent with reference to claim 3 which actually identifies a frame selection unit which extracts frames corresponding to the quality of service

level from the multimedia data stored in the data storage unit and stores the extracted frames in the buffer. *Zhang* mentions a frame skipping module, but this is different than a frame selection unit which extracts frames corresponding to a quality of service level.

While other distinctions undoubtedly exist in the dependent claims including the specific recitations regarding how the bandwidth measuring unit operates and the structure in claims 20, 21 and 22 in particular, Applicants will not belabor the point for sake of brevity. It is respectfully submitted, however, that the independent claim 1 and the claims dependent therefrom are patentable for a variety of reasons some of which have been identified above.

Independent claim 42

Claim 42 recites a multimedia streaming client which includes a bandwidth measuring unit which measures a network bandwidth by using the time interval when the multimedia data is received in the packet receiving unit and the size information of the data. Further a message transmission unit transmits the measured network bandwidth to the server so that the transmission rate of the multimedia data transmitted from the server is adjusted to the network bandwidth. This can be done, on the fly, as explained above with reference to the frame-by-frame selection or extraction process and using the equation identified in claim 44, for instance, as the mechanism for determining network bandwidth. Hence, as identified in claim 45, the transmission unit can identify changes in the network bandwidth whenever the network bandwidth varies. It is respectfully submitted that, as with the explanation as to why claim 1 and its dependent claims are patentable, claim 42, as well as dependent claims 43-45, are also patentable.

Independent Claim 59

Independent Claim 59 is directed to a network bandwidth measuring method of a client which receives multimedia data from a server through a network. It includes the specific steps of setting the size value of an accumulated packet to zero, starting to receive a packet from a server, setting the time when the first packet is received as TS1, and, after the first packet is input until the last packet is input, whenever a packet is input, accumulating the size value of the packet to the size of the accumulated packet. When the last packet is input, the time is set to be TS2. The network bandwidth is then measured by calculating the equation identified in claim 59 and feeding the measured network bandwidth information back to the server.

This very specific mechanism for network bandwidth measuring methods could not be found in *Zhang*. If the undersigned has overlooked some disclosure in this regard, the Examiner is invited to specifically point out any such disclosure.

Claim Rejection - 35 U.S.C. § 103

The Office Action also includes a rejection of claims 7-18, 24-41, 46-58, 60 and 61 under 35 U.S.C. §103 as allegedly being unpatentable over *Zhang* in view of *Lennon et al.* (U.S. 2002/0152267) (hereinafter "*Lennon*"). This rejection is also respectfully traversed.

The Office acknowledges that *Zhang* fails to disclose, among other features, a metal data parsing unit which parses the metadata and outputs the parsing result in the form of a descriptor. For this, the Office suggests that *Lennon* discloses such a metadata parsing unit. Applicants respectfully submit that metadata parsing units *per se* are not novel and are not claimed to be novel by the Applicants. It is the use

of the metadata parsing unit in the context of the claim that makes this feature a patentable distinction. Whether *Lennon* discloses a metadata parsing unit or not, there is not reason one skilled in the art would adopt one in *Zhang,* which operates on a fundamentally different principle as articulated above and in particular does not appear to require or benefit from the use of a metadata parsing unit.

Also, while in theory, *Zhang* might be updated or adapted to use XML, that changes alone has not been established to lead to adoption of changes that would meet the present claim recitations.

The Office suggests that the use of a metadata parsing unit and XML would be obvious to one skilled in the art at the time of the invention because they would promote "efficiently using bandwidth". Applicants respectfully submit that this extremely broad and general desire to efficiently use bandwidth would not begin to teach or suggest the specific changes necessary to motivate or provide reasons such specific modifications do meet the present claims, or that such a modification would in fact promote efficient use of bandwidth. It is respectfully submitted that for a motivation to be valid reason for a hypothetical combination, the alleged motivation must have some nexus to the modification being suggested. It is respectfully submitted that such is not the case in the present circumstances.

Additionally, it is noted that claims such as claims 9, 10 , 11, and 31-38 which deal with very specific nodes and their identify and function are not disclosed in or hinted at by either of the references so far as the undersigned can tell. Again, it is not apparent that there would be any benefit in attempting to combine *Lennon* with *Zhang* but more importantly there is no suggestion for these very specific recitations.

Independent Claim 24

Whether *Zhang* is viewed alone or in combination with *Lennon*, it is respectfully submitted that the applied prior art does not meet the recitations of claim 24. Specifically, claim 24 recites *inter alia* a quality of service processing which selects the QoS level available for service in response to a descriptor information, as derived from a metadata parsing unit which parses the metadata and outputs the parsing result in the form of a descriptor, and the network bandwidth information provided by a message receiving unit which receives network bandwidth information from a client connected to the network, and extracts the multimedia data corresponding to the selected QoS level, particularly when viewed in combination with the buffer that stores the extracted data since neither reference appears to disclose anything akin to an extraction process particularly one based on these two types of information.

As before, the dependent claims add the recitations which further remove the present invention from the applied art, as explained above. The arguments surrounding these claim features will not be repeated for sake of brevity.

Independent Claim 53

Claim 53 recites a streaming method of a server which is connected to a client through a network which includes receiving an estimated bandwidth of the network from the client and based on the descriptor obtained as a result of parsing metadata corresponding to the multimedia data desired to be provided for service, as selecting a current time segment, comparing the target bit rate defined in the descriptor for the selected segment with the network bandwidth and selecting the quality of service available for the service. This is the type of dynamic extraction of frames

corresponding to the selected QoS level transmission to the client that were discussed above, i.e., each frame in the video, for instance, can be selected depending on its QoS level and the network bandwidth at the time it is to be transmitted in the sequence of video. Dependent Claims 54-58 again add features which further remove the present invention from the applied art that will not be separately discussed for sake of brevity.
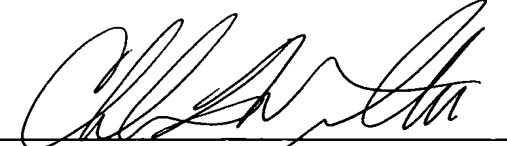
Conclusion

It is respectfully submitted that Applicants have pointed out both features found in the current claims that are not found in the applied reference, whether viewed alone or in combination, and the identified reasons that the hypothetical combination of references is inappropriate. In light thereof, Applicants respectfully request withdrawal of the outstanding rejections and issuance of a Notice of Allowance for the present application.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: <u>December 14, 2007</u>   By: _____
Charles F. Wieland III
Registration No. 33096

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620